DECLARATION of HSUEH S. TUNG

I, Hsueh S. Tung, declare and state that:

1. I am a co-inventor of the subject matter described and claimed in US Patent Application No. 10/620,018 "Methods of Purifying Hydrogen Fluoride".

2. I hold an undergraduate degree in Chemical Engineering from Taipei Institute of Technology (1972) and a PhD in Chemistry from Michigan State University (1981). I have been employed by Honeywell International, Inc., and its predecessor of interest, the assignee of the application, since 1981, holding various positions including Chemist and Senior Project Leader. I am currently a Technical Manager for the Fluorocarbon Process Technology Group. I have extensive experience and familiarity with the development of methods for preparing and purifying anhydrous hydrogen fluoride (HF).

3. I am familiar with the prosecution history of my patent application. I am aware of the Office Action dated September 9, 2006, and understand its contents; including the Examiner's Official Notice that flash distillation and column distillation (or fractionation) are known and conventional steps in the art.

   Not withstanding the Examiner's conclusions to the contrary, one skilled in the art would *not* have known or expected that subjecting a mixture of hydrogen fluoride (HF) and sulfuric acid to *the combination of* a flash distillation process and to a fractionation process would dramatically reduce the amount of sulfur impurities in the process stream. In fact, one skilled in the art would have expected that a simple column fractionation alone could be used to recover substantially pure anhydrous hydrogen fluoride from sulfuric acid, just as we have expected before our discovery. That is, one would expect to see substantially lower sulfur impurities in the distillate of anhydrous HF after a simple fractionation because the normal boiling point of HF is 20 °C and that of sulfuric acid is 338 °C.

   However, we found this not to be the case. Instead, a relatively high level of sulfur impurities remained in the anhydrous HF distillate after a simple fractionation. After substantial experimentation we found, quite unexpectedly, that flashing the HF and sulfuric acid mixed stream *followed by* fractionation dramatically decreases the level of sulfur impurities. This result was unexpected because one skilled in the art would not expect sulfuric acid decomposes to some unknown sulfur compound that have a boiling point less than that of HF and showed up in the distillate of anhydrous HF. Flash distillation followed by fractionation minimizes this decomposition.

4. I hereby declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true and that any willful false statements may jeopardize the validity of the application or any patent issued thereon.

Hsueh Tung Tung — 12/8/2006

Hsueh Tung — Date